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RELATIONSHIP BETWEEN SUSTAINABILITY AND INNOVATION: AN ANALYSIS OF THE ORGANIZATIONAL LEGITIMACY IN COMPANIES OF THE BRAZILIAN ELECTRIC SECTOR

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ABSTRACT

This research aimed to identify in companies in the electric sector listed in the Corporate Sustainability Index (ISE) whether the innovation in Corporate Social Responsibility (CSR) is used as a strategic item to legitimize its actions based on the Legitimacy Theory perspective. CSR places the company acting ethically and seeking economic efficiency, without excluding social and worker needs. The paper focused on the understanding of three innovation dimensions: incremental innovation, radical innovation and game-changing innovation, related to changes in processes, actions and business relationships. This research was delineated as descriptive and documental, based on secondary data analyzed from 2011 to 2016, totaling 9 chosen companies and 54 reports. Regarding incremental innovation, although it is disclosed, it

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is not clear whether such actions are presented as real CSR practices or if they only seek to legitimize organizations to their stakeholders. In the radical innovation issue, for example, there were changes in suppliers' behavior regarding the integration of innovation in the analyzed companies. In game-changing innovation, despite some initiatives, most reports did not present consistent actions. It is concluded that there is still few information of the changes brought by technological and operational innovations, arising from new practices, procedures and behaviors. In addition, innovation as a strategy can be understood as a way of legitimizing CSR actions, being more focused on obligations imposed by regulatory boards. Therefore, there is a gap as to its object as a social characteristic.

Keywords: Innovation. Sustainability. Disclosure. Social report. Legitimacy.

INTRODUCTION

There is no single concept for Corporate Social Responsibility (CSR). For Sacconi (2004), CSR is a governance model in which it represents the responsibility to the owners and the various stakeholders. As for Grecco, Milani Filho, Segura, Sanchez and Dominguez (2013) they place CSR or sustainability reports as documents intended to inform all *stakeholders* about the economic, social, and environmental impact as well as the performance of organizations within a given time frame.

According to *World Business Council For Sustainable Development* (WBCSD, 2017), CSR places the committed entity in an ethical manner, seeking economic efficiency and without excluding social and worker needs.

Within this context, concerned with social and environmental management, the United Nations Environment Program (UNEP, 1992) envisioned commitments that went beyond the environmental investments made by companies as a way of making a profit. These issues aimed at establishing a *green economy*, in which social and environmental projects have been undertaken to serve society and not only as a means of increasing their financial returns.

Despite a concern within CSR, there is no such reporting obligation. However, disclosure on this issue may explain the entities' commitment to reputation and image within their stakeholders (Hooghiemstra, 2000) and also assist regulatory bodies in overseeing CSR actions (Lanoie, Laurent-Lucchetti, Johnstone & Ambec, 2007). It can be said that it would be a positive aspect of the disclosure.

However, there are interests on the part of entities other than those previously mentioned. There is evidence that such information is being used as a strategy to manage the legitimacy of companies (Campbell, Craven & Shrives, 2003; Deegan, Rankin, Deegan & Rankin, 2006; Patten, 1992).

In a broader sense, Scherer, Palazzo, and Seidl (2013) argue that companies that do not adopt sustainability strategies tend to be questioned about their legitimacy. Therefore, managers are interested in increasing the value of the company through CSR information.

There are indications that innovation in companies is associated with sustainability as a strategy, since it produces structural changes in business (Nidumolu, Prahalad & Rangaswami, 2009) based on the aspects that guide Sustainable Development (SD), that is, along with the environmental, economic and social characteristics (Rondinelli & Berry, 2000). Thus, there is an opening for research focused on innovation as a strategic item in order to legitimize its actions in the market.

In this respect, innovation brings changes not only in technological issues, and may incorporate changes in an entity's management models, operating procedures and other environments (Szekely & Strebel, 2013).

The authors classify innovation into three types with regard to sustainability. The first, *incremental innovation*, takes into consideration changes in terms of product, services or

processes. Second, *radical innovation*, encompasses changes with suppliers, civil society organizations, and other stakeholders. And the third, *game-changing innovation*, which fits into the context of organizations and generates transformations in the practices, structures and objectives of the company.

Thus, bringing it to the Theory of Legitimacy, it is possible to translate that the main interest involved with the innovation of organizations can identify what is the CSR of a given entity (Deegan *et al.*, 2006; Patten, 1992). Such CSR is also one of the topics addressed by innovation governance, which aims to regulate and identify sustainable technologies and risks (Deschamps, 2012).

Within this scenario, this present review aims to identify within the electricity sector companies listed in the Corporate Sustainability Index (ISE, in Portuguese) whether CSR attribute innovation has been used as a strategic way to legitimize the institutional image.

This index, established by the São Paulo Stock Exchange, is composed of companies selected based on a questionnaire developed by the Getúlio Vargas Foundation's Center for Sustainability Studies (CES-FGV). These companies are framed as a reference for sustainability and responsibility in the Brazilian business environment.

This study is justified by the fact that Brazil is part of the 2030 Sustainable Development Agenda established by the *United Nations Environment Program* (UNEP, 2016) which, through an analysis related to Latin America and the Caribbean, set a number of priorities for sustainable development.

The electricity sector, which was the basis for this research, is also justified as important in the context of sustainability by its potential polluter and user of environmental resources, as already stated in Law No. 10,165/2000 (Brazil, 2000a), which provides for the National Environmental Policy and the polluting potential of electric activity, and Law No. 9,991/2000 (Brazil, 2000b), which provides for research and development on efficiency in the domain of electricity concessionaires. Moreover, according to Alrazi, de Villiers, and Van Staden (2016), the electricity industry has strict public and societal control over significant environmental impacts.

The limitation of the study ends up being the energy sector itself, since the conclusions are based only on this activity. Another limitation point could be given by the chosen period, as in other years, the sample period would offer different conclusions. Thus, it is understood that different analyzes and findings could be inferred if such variables were changed.

2 THEORETICAL FRAMEWORK

2.1 Legitimacy Theory

According to Patten (1992), the idea of the Theory of Legitimacy is based on the concept of social contract brought by Shocker and Sethi (1973), which states that any social institution, including companies, operates via implicit or explicit social contracts and that, for its growth and survival, needs some understanding.

The first would be related to the delivery of certain desirable ends to society in general. In a second point of view, these contracts would be linked to the economic, social, and political distribution to beneficiaries from which this power is derived.

However, according to Shocker and Sethi (1973) and Patten (1992), in a dynamic society, neither the sources of institutional power nor the needs for services are permanent. Thus, an organization must seek legitimacy by demonstrating that the society demands its services and that the groups it benefits from are also approved by these members (Patten, 1992).

Deegan (2002) points out that the perpetuity of a business is linked to the perception that society has about possible violations that may occur in this contractual relationship. In a context in which society is not convinced that these organizations are operating legitimately, these

contracts will be revoked. A business is considered legitimate when its organizational practices are designed to meet the key expectations of its environment (Scherer *et al.*, 2013).

Legitimacy can be understood from different optics explained by other perspectives, as pointed out by Patten (1992), Gray, Kouhy and Lavers (1995) and Deegan (2002), who claim that their concepts are derived from overlapping social-political theories. Thus, it can be understood that disclosure is a function of both social and political pressure.

Patten (1992) states that economic legitimacy is confirmed by the market. However, the social issue is monitored and approved by the public policy process. Here one more point needs to be paid to the optics used in understanding theories, as advocates of the theory of legitimacy often speak of society and the fulfillment of its expectations.

However, Deegan (2002), states that this idea gives a false understanding of the breadth of the concept of society and that it is represented by different groups with unequal power to influence the activity of others.

Linking with *Stakeholder* Theory is necessary to turn explicit the fact that different groups have different ways of seeing how organizations conduct their business and also have different abilities to affect them. Thus, when discussing a public policy, the focus of organizations and their relationship with society turns to certain groups and these have their concept linked to users proposed in the *Stakeholder* Theory.

Gray *et al.* (1995), explain that it is in this context that *Stakeholder* Theory and Legitimacy Theory intertwine with mediation, modification, and transformation, but from different points of view. For Patten (1992), if a company suspects that its legitimacy will be threatened, it will be willing to actively enter the political process focused on the main stakeholders of the performance of this business. According to a study by the author, one of the methods of participating and attempting to engage companies to improve image in the case of using the Theory of Legitimacy can be noted by the increased disclosure of financial reporting by oil companies.

More specifically, based on the Theory of Legitimacy, the social disclosure made by companies in these reports may influence the public policy process and the opinion of society (Patten, 1992). Thus, organizations can be engaged in this process by demonstrating legislative concerns or projecting a socially responsible image.

Gray *et al.* (1995), point out that the continuation of a business requires the support of the interested parties and, for this, the company must request approval from its interest group. Thus, social disclosure is seen as a dialogue between the company and its *stakeholders*.

2.2 Innovation and Sustainability

1987 was a milestone in the issue of sustainable development. The World Commission on Environment and Development (CMMAD), created in 1983 by the United Nations (UN), established the document Our Common Future or Brundtland Report, approved by the UN General Assembly, which defined whether environment and development should work together for sustainability (Unep, 1992; Estades, 2001).

Such a formulated vision becomes a way of paying attention to development policies linked to the environmental issues of a given nation. Therefore, economic growth must be focused on issues related to investments in new technologies to preserve or reverse environmental problems (Estades, 2001).

In this sense, a sustainable social development is envisaged, which includes the eradication of poverty (Griggs *et al.*, 2013), establishing an innovation focused on aspects that work to generate new ideas, processes, products or services (Voegtlin & Scherer, 2017). That innovation is found in business organizations, and play an important role in sustainability (Scherer et al., 2013).

Regarding the innovation aspect specifically linked to the CSR, there are two aspects discussed in the works of Scherer et *al*. (2013) and Voegtlin and Scherer (2017). The first is

considered responsible innovation, which will not harm the health of consumers and others involved in the production process, ensuring the preservation of the environment. The second considers an innovation that must be focused on the common good and the planet, being studied as a strategy of organizations, in order to establish competitiveness against every other competitors.

Szekely and Strebel (2013) conducted a study addressing how sustainability could be incorporated into companies. The authors consider innovation as a strategic way to achieve sustainability. Therefore, the aim is to incorporate environmental, social, and economic issues into the development of a given product or service (Rennings, 2000).

Within such work, it has been identified that *incremental innovation*, for example, was better suited to companies with no experience and that aimed at product changes to achieve sustainability goals.

With external demands due to climate and environmental factors, companies sought to embrace radical innovation by engaging other players in the production line and, to integrate into a social and environmental value chain, developed a *game-changing innovation* perspective (Szekely & Strebel, 2013). The characteristics on innovation rankings are shown in Table 1.

Table 1
Strategic innovations for sustainability

Dimension	Features
Incremental innovation	Innovation is focused on changes in building of best practices in the design of products, services, and processes, related to environmental and social issues. To this end, the company may be using eco-efficiency and environmental management models to perform measurements.
Radical innovation	In this innovation, there is a systemic interaction that impacts, for example, on suppliers of inputs that tend to adapt to new customer requirements in their demand to produce sustainability. Thus, there is a chain shift of the various niches present in the elaboration of a certain product or service.
Game-changing	When innovation comes to change the interaction between competitors in the industrial environment, people's behavior also changes, reaching the level of shifting corporate goals. This can be visualized with the help of economic systems geared towards industrial ecology or consumer products for recycling purposes, as well as social entrepreneurship, which seeks to provide solutions for this environment.

Source: Adapted from Szekely, F., & Strebel, H. (2013). Incremental, radical, and game changing: strategic innovation for sustainability. *Corporate Governance: The International Journal of Business in Society*, *13*(5), 467-481; Voegtlin, C., & Scherer, A. G. (2017). Responsible innovation and the innovation of responsibility: governing sustainable development in a globalized world. *Journal of Business Ethics*, *143*(2), 227-243.z

In this context, several factors are put in the discussion about innovation and CSR. One factor is linked to the issue of environmental policies, which play an important role in innovation, especially in terms of competitiveness.

Research from Rennings, Ziegler, Ankele and Hoffmann (2006) within German companies, has identified environmental management linked to innovation and how it impacts the competitiveness of organizations. However, a satisfactory environmental management system must be implemented and developed in order to achieve competitive strategy (Iraldo, Testa & Frey, 2009).

Another important point is characterized about differentiated products, i.e., green technologies, which are a field explored in strategies on CSR and competitiveness among organizations (Siegel, 2010). Costs placed therein to ensure sustainability might induce consumers to choose one product over another, that is, how much consumers are willing to pay more for products that supposedly do not pollute the environment (McWilliams, Siegel & Wright, 2006).

The combination of bringing the common good with sustainable innovations is another point discussed and characterized as social entrepreneurship, which addresses how to utilize

resources bringing feedback to society (Crisan & Borza, 2012). This relationship can be understood as a way to relate the needs of various social actors with organizational practices aimed at their valuation (Zahra, Gedajlovic, Neubaum & Shulman, 2009).

Within the context presented, we can realize that there are several ways to use innovation within practices related to CSR in order to contribute to the sustainable development of organizations.

3 METHODOLOGICAL PROCEDURES

According to the perspective presented by Martins and Theóphilo (2009), this research was designed as descriptive and documentary based on secondary documents represented by the reports obtained from the companies that make up the Corporate Sustainability Index - CSI (ISE in Portuguese) in the different periods analyzed.

As a technique for data processing, qualitative content analysis has been utilized, which according to Bardin (2009), is composed of a set of communication investigation techniques that use a series of systematic procedures to describe the content of messages.

For data processing, we used ATLAS.ti version 7 *software*, widely used within the field of qualitative data research.

The sample universe was based on CSI. It has been conceived in a pioneering way, seeking an investment environment that was compatible with the demands of sustainable development and society.

CSI, created in 2005, was funded by the International Finance Corporation (IFC), which is a branch of the World Bank (FGV, 2017). This index allows for a comparative analysis of performance from different points of view such as corporate sustainability, economic efficiency, environmental balance, social justice and governance.

FGV (2017) also states that CSI involves aspects of sustainability and differentiation of organizations in terms of quality, commitment to development, transparency, accountability and performance of the economic-financial, social, environmental and climate change dimensions. The chosen population was based on the period from 2011 to 2016 and is represented in Table 2.

Table 2
Portfolios Corporate Sustainability Index - CSI (Opening)

1/3/2011	1/2/2012	1/7/2013	1/6/2014	1/5/2015	1/4/2016
38 Companies	37 Companies	37 Companies	40 Companies	39 Companies	34 Companies
47 Actions	50 Actions	51 Actions	51 Actions	50 Actions	38 Actions

Source: FGV. (2017). Corporate Sustainability Index (CSI).

The justifying for this period is the fact that in 2011 there have been changes in the methodology of the index. One of the changes was the shift of portfolio period, which became effective from the first business day of January to the last business day of December of each year. In the previous version, the CSI portfolio was effective between the first business day of December and the last day of November of the following year.

This measure was created aiming at the adequacy of the index and also the creation of new products, since the period of validity was aligned with the other indexes (BM&FBOVESPA, 2017).

2011 was also marked by improvements in the questionnaires of previous years, used to choose companies, which make up the index. Among the main changes are the inclusion of Global Reporting Initiative (GRI) indicators (BM&FBOVESPA, 2017) with CSI questionnaires, ISO 26000 and the inclusion of the Green Protocol, among other aspects.

Based on the relevance of the sector within the sample space, polluting potential and also for reading parameterization and analysis of the reports, the chosen sector was the electricity sector. Therefore, the sample got represented by the companies AES Eletrobras, AES Eletropaulo, AES Tiete, Companhia Energética de Minas Gerais (Cemig), Companhia Paranaense de Energia (Copel), Companhia Paulista de Força e Luz (CPFL) Energia, Energias BR (EDP), Engie e Light.

According to the defined timeframe, from 2011 to 2016, 9 companies in the electricity sector have been analyzed, which published their GRI indicators for 6 consecutive years, totaling 54 reports in the analysis performed.

To identify CSR practices and possible legitimation practices of organizations according to the Theory of Legitimacy, the approach taken by Szekely and Strebel (2013) and Voegtlin and Scherer (2017) regarding the forms of strategic innovation for sustainability have been utilized.

For detailed analysis of the data present in the reports, an analysis was made using Atlas TI *software*. Following were identified the most frequent words that were part of each report investigated and that were part of the definitions of the three types of innovation previously conceptualized in Table 1.

Incremental Innovation

In the *incremental innovation* item, for content analysis purposes, the following information has been identified:

1. Research and development for the achievement of sustainable products, i.e. products that aim to be elaborated with respect to the environment, social and economic;
2. Existence of Environmental Management in organizations;
3. Indicative of improvements in material use efficiency;
4. Use of new products to replace those characterized as unsustainable.

Radical innovation

In the item related to *radical innovation*, the focus of the research was to identify within sustainability reports the following trends:

1. Changes in the behavior of suppliers regarding the integration of innovation in the entity;
2. Changes in the way of disposal of products indicated for disposal due to the context employed by the innovation;
3. Insertion of requirements within suppliers to change products sustainable due to consumer needs;
4. Partnerships with other entities in order to develop new sustainable technologies.

Game-changing innovation

In the matter of *game-changing innovation*, the items that have been researched to evidence such level of innovation, within sustainability reports, were as follows:

1. Social entrepreneurship projects developed by the entity within the society;
2. Concern about the use of renewable and non-renewable resources, focusing on their replacement;
3. Changes in culture, norms or behavior of organizations driven by innovation.

Given the idea presented by Bardin (2009) within the qualitative research process, the analysis has been performed based on the theoretical framework and the reports available for documentary observation. That idea aimed at achieving storage in a variable form and facilitating access for observers so that they could get the most attention related to the quantitative aspect of reporting information and the most pertinent to the qualitative aspect of the analyzed information (Bardin, 2009).

The concepts presented by the authors have been deployed in others. Additionally, using the content analysis technique, other concepts emerged within the standardization created for the analysis of the reports and were later related in the analysis of the results.

In order to gather information to support the content analysis, information inserted within the sustainability reports has been identified and that is consistent within the dimensions presented in Table 1.

Reports from different sectors do not allow comparison between them, since there is a form of parameterization found on each sector. For this reason, this research was limited to only one of the sectors present in CSI, the electric energy.

Even in Brazil, the disclosure of social and environmental information occurs mostly on a voluntary basis and is not yet a requirement regarding the content and structure of the reports. According to Grecco *et al.* (2013), this lack of standardization makes it difficult to compare the practices adopted by companies and threatens the process of legitimation.

This research has sought to find a standard in choices regarding innovation issues from a sustainable perspective in an area that supports much of the CSI, which is electricity, and must meet regulatory requirements and internal standards. Organizations that consistently participated in CSI over several years have also been chosen. It has been observed that 11 companies were part of the electricity sector, of which 9 companies had never left the index during the chosen time frame.

It should be stressed that international organizations such as UNEP are seeking results in countries to achieve their sustainability commitments, such as Agenda 2030 (Unep, 2016).

Grecco *et al.* (2013) also cite other initiatives such as NBR 16001 and GRI, among other types of certificates that also aim to support initiatives in the area and reinforce aspects related to the socio-environmental issue and their effective dissemination and practice.

For the data analysis, next will be placed three topics directed to *incremental innovation, radical innovation* and *game-changing innovation*, which have been defined as parameters for verifying the legitimacy of organizational practices.

4 RESULTS ANALYSIS

Incremental Innovation

All reports indicated that Research and Development (R&D) focused on the entity's products, focusing on sustainability issues. However, according to Law No. 9,991/2000 (Brazil, 2000b), it is noted that there is a need for investments in R&D and energy efficiency by companies operating in the concession and permission and those that are authorized to distribute electricity.

In article 1st of the referred law (Brazil, 2000b), it is observed that companies operating in the electric energy must apply "at least seventy-five hundred per cent of its net operating revenue from research and development in the electricity sector and at least twenty-five hundredths per cent in energy efficiency programs". There are still other percentages that will change in future periods and that must be observed by such organizations in accordance with the provisions of the referred legislation.

The presentation of the sustainability report can be justified due to both political and social pressures and is in line with what has been exposed by Gray *et al.* (1995). Grecco *et al.* (2013) report that this fact also impacts numbers and information, threatening comparisons and policies.

About the existence of an Environmental Management policy in the organizations, only Copel did not make clear its existence. In the other reports, it has been identified that the entities are entering their own information about Environmental Management. Questions regarding improvements in material use efficiency can be found in Table 3.

Table 3
Indicative of improvements in material use efficiency

Type	Periods					
	2011	2012	2013	2014	2015	2016
Materials	CPFL, Copel, Engie, EDP and Eletropaulo	Copel, Engie and Eletropaulo	Copel and Eletropaulo	Eletropaulo	EDP, Light and Eletropaulo	Eletropaulo
Support System and *Smart Grid*		EDP	EDP	CPFL and Cemig	Light and Copel	
Emission of gases	Eletrobras	Eletrobras	Eletrobras	Eletrobras	Eletrobras	Eletrobras
Energy saving			Cemig			

Source: Prepared by the authors (2018).

In general, companies are aiming to reuse or improve the use of materials relevant to their production. In addition, EDP, CPFL and Cemig have got a focus on using new systems that enable improvements in their production in order to observe social and environmental issues.

Eletrobras stands out for investing in a gas emission system. That is, the focus on production can be understood as a way to make less spending, bringing higher returns, which is an interest linked to ensuring a good image for stakeholders, in this case investors (Hooghiemstra, 2000).

Energy saving, however, appears only in Cemig's 2013 report, demonstrating that there is still a long way to go in these matters, i.e., such disclosure appears incipiently in the reports presented. In addition, EDP, Light and Copel have inserted *Smart Grid* in their context in order to have a more efficient electricity system in both economic and energy issues.

Finally, in 2014 Cemig presented energy saving results in its report. Rennings (2000) points out that new technologies take at least ten years for their implementation process to be put into practice. Therefore, if sustainability reports point to this possibility, it may be an important finding showing that organizations have been trying to learn and put these actions into practice.

As for the item about product replacement, only Light in 2015 and Copel in 2013 did not report whether they were seeking such innovations. The remaining items of the sample show a concern in substitution for products with higher efficiency and lower environmental impact and with systems that are more efficient. Such an approach is in line with Voegtlin and Scherer (2017) on the insertion of new technologies and products in order to advance sustainable development.

Highlights for Eletrobras that in its report identified research conducted for wind and solar energy. Eletropaulo has been subsidizing the replacement of light bulbs for lower impacts on energy consumption at traffic lights, tunnels, schools, among others. These were the points found in relation to renewable sources of product use.

Radical innovation

In the item related to changes in behavior of suppliers regarding the integration of innovation of the entity, some processes, performed by the contracting companies that indirectly contribute to the change in the supplier profile have been identified.

For example, in 2012, CPFL reported their supplier-training project, and in 2014, it introduced a monitoring system for suppliers for verifying that they met regulatory criteria and standards relevant to the activities performed.

Eletrobras stands out as of 2015, since its suppliers must comply with environmental legislation, with the use of clean and environmentally friendly manufactures. EDP in 2012, 2013

and 2014 indicates the use of criteria for choosing suppliers with a program called "Sustainable Supplier."

Eletropaulo, in turn, has a program presented since 2011 to suppliers and created an index entitled "Supplier Performance Index." In this metric criteria regarding the sustainability of suppliers are analyzed and the company holds a contest award annually for the best supplier.

It cannot be said that this insertion of suppliers is linked to the idea that legitimacy is being achieved due to the companies' search for transparent social needs, since it seeks to meet regulatory requirements, and not due to external factors directly linked to climatic changes (Szekely & Strebel, 2013). None of the reports provided information on requirements with suppliers due to criteria imposed by consumers.

According to Rennings (2000), companies seeking energy-efficient, energy-saving products that have energy-saving or gas-reducing materials already reached at least 80% of organizations involved in innovative businesses in Germany. In the observed sample, reports showed that, in relation to product disposal, in 2015 Light company implemented a project for the disposal of aquatic plants and obtained satisfactory results.

In 2011, Copel placed a program focused on waste management. in the body of the report. Since 2012, Eletrobras has been highlighting in its reports the ways its waste are discarded or reused. Eletropaulo highlights its management for waste and water disposal, as well as their reuse, setting annual targets. Thus, these organizations seem consonant with modern market practices.

Finally, the entities refer in their reports to partnerships with educational institutions, foundations, associations, public-private partnerships, among others, in order to subsidize research for technology development. These partnerships are also shown present in the literature (Deegan *et al*., 2006; Rennings, 2000).

Game-changing innovation

For social entrepreneurship projects developed by the entity within society it was found that Light did not communicate whether they existed in order to boost social entrepreneurship, except for 2015 with the "Efficient Community" program.

Social entrepreneurship projects have been reported, although not every year they were well discriminated in the reports, and actions have been observed from Light towards society. The link with the Theory of Legitimacy can be observed, as put by Patten (1992), in which companies need to demonstrate to society that they are socially responsible.

Much of the concern in this type of action is noted in the awareness of the communities and regions involved (in the proper use of the electricity grid), with little evidence or resources being applied for the creation of social enterprises that actually generate income for people.

In the other reports, it has been observed that companies seek to incorporate projects for internal and external audiences. One such case is the CPFL company, which has a new business program. In the other hand, Eletrobras possesses the capture and treatment of ideas from both employees and external public.

Also noteworthy are programs that encourage young people, such as Copel's "Young Citizen" and EDP's project to encourage young people in Guarulhos.

Engie operates with the Third Sector incentive program. There has been checked also the existence of the project "Energy of Good" of Eletropaulo, which seeks company volunteers to work on different fronts with the population, non-governmental organizations and other social actions.

It is clear that this evidence demonstrates the search for a presentation to society of sustainable corporate responsibility. In other words, it identifies that its legitimacy must be perpetuated and viewed by the various strands of society (Deegan, 2002).

Regarding the concern with use of renewable and non-renewable resources, focusing on their replacement in organizations, observing Eletrobras reports, it has not been possible to identify this information, and in 2011 Engie did not provide this data.

Other companies reported that they had been working to reduce the consumption of resources that cannot be regenerated and seeking best practices with renewable resources, especially with regard to water and the insertion of renewable energy.

The relationship of these efforts is generally addressed, and while priorities are not cited, they are often cost-oriented. In this case, the *stakeholder* contemplated with this cost reduction becomes the investor, since the objective is to generate greater economic efficiency with lower resources.

It is noted that there is no specification for what these reductions are. They only report that they work in various areas or projects to achieve a higher degree of sustainability.

In the item related to changes in culture, norms or behavior of organizations driven by innovation, the impact on CPFL's behavior is the question of new standards for choosing suppliers due to the implementation of document management that has saved resources and also projects of internal systems for energy reduction.

Light highlighted the impacts caused by actions related to preventive safety, leveraged projects due to the fact that innovation has to be incorporated into the entity's processes and the ways of customer service that have changed.

For Eletrobras, the highlight in behavior is the fact that it has incorporated a program to make employees aware of sustainability standards.

For Tractebel, the proceedings have been highlighted by the climate change policy, which focuses on factors such as waste of materials, which also led to changes in hiring suppliers. At EDP, the change came with the implementation of the Management System Manual, in which one of the actions was to train employees and suppliers to disseminate environmental education.

Changes in culture, norms, or behavior were not revealed during the analysis of report content. What has been found was only linked to changes in the legislation for the electricity sector and its implementation.

At Light, for example, there was the Research and Development Programs initiative, which has been prepared in accordance with Law No. 9,991/2000 (Brazil, 2000b), determining percentages of 0.20% and 0.40% of Operating Net Revenue for research and development. In 2012 there has been an increase in the participation of projects related to the innovation chain due to the publication of new regulations, which seeks to foster end-market products with commercialization potential. Herein we observe normative aspects, corroborating the idea of the Theory of Legitimacy proposed by Patten (1992), precisely by the fulfillment of a legal aspect only, without any initiative of its own.

5 CONCLUSIONS

Based on the Theory of Legitimacy, this article aimed to identify within the electricity sector companies, from 2011 to 2016, listed on the CSI, whether innovation is being used as a strategic item for legitimacy and CSR. For this, we used the approach brought about innovation by Scherer *et al*. (2013) and Voegtlin and Scherer (2017).

The research sought to understand whether organizations disclose their innovation actions as a way to contribute to sustainable development or if they seek to be engaged in this process by demonstrating only legislative concerns or projecting their image as socially responsible, emphasizing the relationship of Legitimacy (Patten, 1992) combined with *Stakeholder* Theory (Gray *et al.*, 1995).

Using qualitative data analysis (Bardin, 2009), the research investigated the Brazilian electricity sector that is part of CSI. The final sample consisted of 9 companies and the sector

was chosen for its representativeness within the specific legislation index due to its impact on the environment, Law No. 10,165/2000 (Brazil, 2000a) on the polluting potential of the electricity sector and Law No. 9,991/2000 (Brazil, 2000b) on the need for research and development in the area.

Regarding the *incremental innovation* (Scherer et al., 2013; Voegtlin & Scherer, 2017), which brings together items related to research and development of sustainable products, the existence of environmental management in organizations and the use of new products to replace them considered unsustainable, it was noted that most organizations have developed practices in this regard.

However, it should be noted that in some contexts, such as use of more efficient systems, companies may be working with a greater vision to ensure satisfactory economic outcomes, such as reducing costs and improving business chain results, to the detriment of those related to the social and environmental context. This is consistent with the prospect of bringing satisfactory financial returns to companies and not that they have a concern for sustainability. Thus, such a context deserves more disclosure for better finding purposes.

Thus, although disclosed, it is not clear whether these actions are presented as actual CSR practices or if they only seek to legitimize organizations against their *stakeholders* (Patten, 1992; Alrazi *et al.*, 2016).

This may be linked to the fact that the electricity sector in Brazil is highly regulated, thus having to comply with a number of requirements in the legislation (Brazil, 2000a, 2000b) and also being composed of publicly traded companies, which justify the goal of a good image within the capital market.

In terms of *radical innovation*, for example, changes in the behavior of suppliers regarding the integration of innovation in the entities analyzed by Scherer *et al*. (2013) and Voegtlin and Scherer (2017).

This issue is consistent with current environmental legislation and can also be understood as a legitimacy gap, as changing an organizational parameter is characterized as such (Patten, 1992; Deegan, 2002; Alrazi *et al*., 2016). It is common sense here that companies are seeking practices that comply with normative issues and validate them in front of their stakeholders, seeking to satisfy business interests to the detriment of socio-environmental interests.

In the *game-changing innovation* item, the research aimed at understanding items such as entrepreneurship projects, concern for the use of renewable and non-renewable resources and changes in the organization's culture.

Despite some initiatives, most of the reports did not show consistent actions, but only provided data on new business programs and employee brainstorming and incentive programs for the Third Sector, but without impacting the environment and society as a whole. It is noteworthy that the latter type of innovation has the greatest impact on the management of entities.

Other achievements show the choice of projects that aim to reduce organizational costs without presenting the sustainable advantage of these actions or requirements of customers and suppliers, but without highlighting how they occurred and the concerns about the environment.

It is noteworthy that there is little information on the changes brought about by technological and operational innovations arising from new practices, procedures, customs and habits evidenced by the companies in question, and that changed as a whole the way they organize and act in society.

Special attention is paid to the relevant legislation of the sector, in terms of legal, social and environmental responsibility. Specifically, its obligation for investments in innovation and other standards mentioned in the reports of the organizations analyzed has been observed.

Thus it was possible to understand once again the legitimating issue from the legislative point of view (Patten, 1992) and not addressing the environmental issue as a main concern, i.e.

the actions and reports are not really concerned with the environment and, positively, in legitimizing the company in front of its *stakeholders*.

So, in general, what is observed is that the reports in question exist as a way of complying with political issues and not as the main object of bringing to society clear and objective information about their actions, as stated by Patten (1992), Gray *et al*. (1995) and Deegan (2002). That is, they are mainly designed to serve regulatory bodies, and innovation is understood here as a strategic way to serve these bodies and legitimizing their actions.

Thus, the highlight of this research is mainly the fact that the reports are not standardized, making the interpretation of the findings difficult, and the fact that investments for research and development are presented in a crude way, without identifying separately where the resource has been employed. Therefore, understanding the reports can be understood as a difficulty not only for researchers, but also for society in general.

As indications for future researches, we can look for models of data presentation on innovation and sustainability that are of higher quality by companies and with a clear understanding, since the analyzed models are not standardized. A clearer way of presenting investments for innovation as well as the allocation of the employed financial resources could be applied to the various sectors.

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